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Sim Carnation Co., Inc.

Saugus, Mass.

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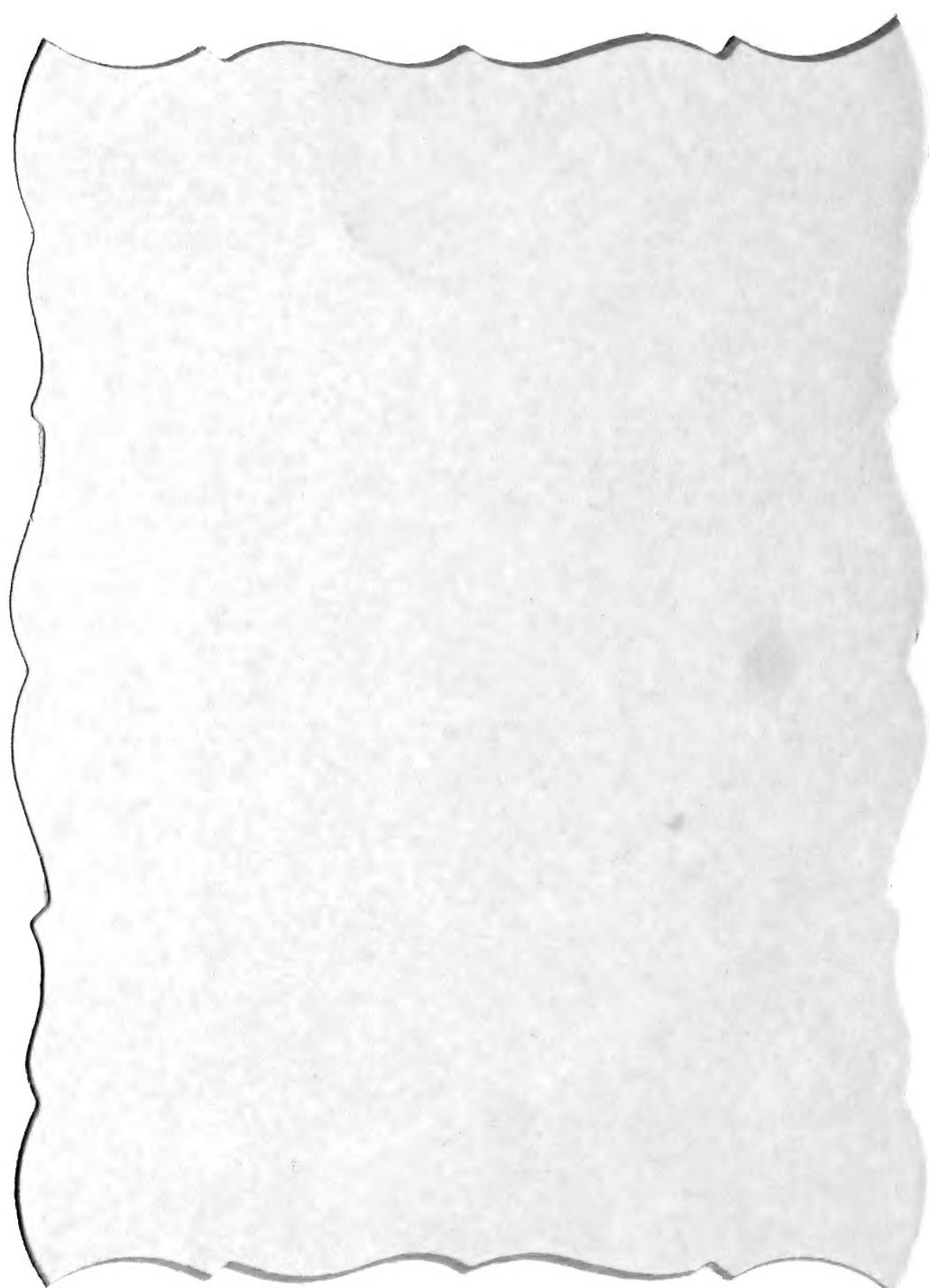


U.S. Department of Agriculture



Carnations





1998.10.26
10:30



FINE NEW ENGLAND STOCK

Offered by

SIM CARNATION CO., INC.
CAMBRIDGE, MASS.



LAST season, for the first time in several years, we did not send out a catalogue. Our labor situation was serious, the demand for cuttings was so great that we could not accommodate everyone, and we felt that distributing a catalogue would further complicate a difficult situation.

We are just as short-handed today as we were a year ago. The demand for carnation cuttings this season is already greatly in excess of last year's demand. Nevertheless, we are convinced that we have a responsibility in sending this little catalogue to you and other friends . . . the responsibility of renewing and preserving friendships, of strengthening reputations and maintaining good customer relations. We want you to keep remembering us, and we want to make you feel our appreciation of your goodwill and patronage. We wish to continue serving you to the best of our ability during these difficult days, and to resume our normal relations when peace and sanity return to the world.

We may not be able to fill your order as promptly this season as both of us would like. We may not be able to tell you exactly when your order will be shipped, except that it will go out within the propagating season, and as promptly as possible. We may not even be able to accept your order if you delay too long in placing it. But we want you to know that we are working long hours and striving hard to serve you efficiently and to accept as large a volume of business as will permit us to maintain our reputation for quality and service.

We are making great plans for future expansion and improvement, and when conditions finally return to normal, you may be assured of receiving unsurpassed service. In the meantime, we solicit your cooperation and patience. We insist upon producing quality stock and handling it properly, regardless of the volume of business we may transact. If you do not receive your order when you expected it, please remember that the job of growing plants of high quality cannot be rushed, that more growers are buying carnation cuttings today than ever before in the history of the industry, that we have sent a great many of our men to the armed forces and to war industries, and that we are laboring under serious handicaps. We assure you that we are constantly working and planning to serve you better.

WHITE VARIETIES

ARUNDEL. One of the newer white seedlings. The flowers resemble those of Olivette in form. They are medium size, very fragrant and keep well. The plants are clean, large and bushy. The stems are strong, and production is good. This is one of the varieties which we have been able to carry over into the second season very successfully.

\$12.00 per 100 \$100.00 per 1000

GENERAL PATTON. This seedling was introduced last season. We have not grown it long enough ourselves to present accurate production figures, but it appears to be a good producer. The blooms are of medium size, are very fragrant and are good keepers. The stems are of good length. The plants are not as large nor as vigorous as those of Arundel.

\$12.00 per 100 \$100.00 per 1000

OLIVETTE. This continues to be by far the most popular of all of the white carnations. The fragrant, symmetrical blooms are produced steadily and heavily throughout the season. They are excellent keepers. The stems are sturdy and of medium length. Practically no splitting occurs. Flowers are very compact, and should be allowed to open before being cut. The variety does best when inside culture is practiced and the plants are benched early. It requires plenty of water.

\$8.50 per 100 \$75.00 per 1000

PEACE. This variety is very similar to Patrician in size, form, and general appearance. The blooms are large. Some pink flaking occurs during the winter months, but this does not detract from the beauty of the flower. Some splitting occurs. The stems are not as long as those of Patrician. Production is heavy, and in the spring the quality of the blooms is unsurpassed by any other white carnation. The foliage is a lighter green than most varieties, and the plants require a little longer to become established after benching. Best when grown inside.

\$8.50 per 100 \$75.00 per 1000

WHITE FISHER. A pure white sport of Peter Fisher, having all of the characteristics of the parent plant. The medium sized flowers are produced in abundance on long stems. The flowers resemble those of the old variety Ivory, and are very popular for floral work. For other characteristics, see description of Peter Fisher.

\$8.50 per 100 \$75.00 per 1000

WHITE MAYTIME. Probably the loveliest of all of the white carnations. The flowers are larger than average, are full-centered, have a delightful spicy fragrance and keep perfectly. This is a sport of Maytime. For further description, see Maytime.

\$8.50 per 100 \$75.00 per 1000

PURITAN. This prolific and profitable variety has actually improved in quality and popularity during the past two seasons; so much so that many growers are increasing their plantings of Puritan. A heavy producer of good-sized flowers carried on long stems. The blooms are fragrant, and are excellent keepers. Splitting is very rare. The plants are large, and easy to grow.

\$7.00 per 100 \$60.00 per 1000

DARK PINK VARIETIES

VIRGINIA MILLER. This is one of the most valuable varieties that has been introduced in a great many years. It is a sport of Virginia. The color is a true deep pink, the shade of Ward or Rosalie. It is not to be confused with Virginia Rose, for it is much darker than that variety. This color in a really good variety has been lacking for some time. Every grower who is able to grow the Virginia varieties successfully should certainly secure stock of Virginia Miller. For further description, see Virginia. (There are at least two other sports of Virginia on the market, each bearing a different name, which are identical to Virginia Miller, but which sported with different growers.)

\$15.00 per 100 \$125.00 per 1000

DARK PINK FISHER. The most valuable of the Peter Fisher varieties. The color is very popular, being much darker than Peter Fisher, but not quite as deep as Rosalie or John Briry. Its habits and appearance are the same as those of Peter Fisher. For further description, see Peter Fisher.

\$10.00 per 100 \$80.00 per 1000

JOHN BRIRY. This fine deep pink carnation attains the highest quality of any variety in its color class. The flowers are very large and full-centered, with fringed petals, firm calyxes, and especially long, strong stems. The plants are vigorous and are very large and bushy. The flowers keep wonderfully, and will invariably bring premium prices on all markets throughout the season. The variety is not a heavy producer.

\$8.50 per 100 \$75.00 per 1000

DARK PINK MAYTIME. A sport of Maytime which has all of the characteristics of the parent plant except that the flowers are slightly larger and are a beautiful shade of deep pink. The flowers have the same delightful form as do all of the Maytime varieties, and there is no deep pink carnation today that can surpass this variety in color, form, productiveness and general quality. It has the same habit of splitting and being slightly brittle that the other Maytime varieties have, but even with these faults, it is one of our most profitable varieties.

\$8.50 per 100 \$75.00 per 1000

NEW DEAL WARD. This is a selected and improved Boston Ward. The color is slightly deeper than that of Boston Ward, and the plants are a little more vigorous. Otherwise the habits are those of Boston Ward. It is a popular and widely-grown variety, but it does split freely at times. The flowers keep perfectly.

\$7.00 per 100 \$60.00 per 1000

*Cheap plants and flowers generally produce cheap results.
There is no substitute for quality.*

MEDIUM PINK VARIETIES

ROSE CARESS. A seedling originated by the U. S. Department of Agriculture and disseminated through the Society of American Florists. The flowers are large and full and beautifully formed. The stems are very long and sturdy. The calyx is firm. The variety flowers early, and production is good. Flowers keep well. Plants are large, clean and vigorous. The color is a fine rose pink similar to that of Pink Treasure when that variety is at its best. The one fault of Rose Caress is that there is a tendency for some mottled, or off-colored blooms to appear.

\$10.00 per 100 \$80.00 per 1000

GIANT FISHER. A sport of Peter Fisher. The flower is the same color as that of Peter Fisher. The plants have the same appearance and habits. Production is about the same. The blooms, however, are very much larger than those of the parent variety. When the first flowers appear, they do not differ greatly from those of Peter Fisher. However, the size of the bloom increases rapidly, so that by Thanksgiving the difference is very apparent. Because of the much larger, fuller flowers, some splitting occurs.

\$10.00 per 100 \$80.00 per 1000

VIRGINIA ROSE. A medium or rose pink sport of Virginia. The color is lighter than that of Ward or Rosalie, but brighter and more uniform than that of Peter Fisher or Pink Treasure. This is one of the most popular carnations grown today, for the delicate rose pink blends beautifully with other colors and in all types of floral arrangements. The plants seem to be a little more vigorous than those of Virginia, and production will run slightly higher. Otherwise, Virginia Rose is exactly the same as Virginia.

\$8.50 per 100 \$75.00 per 1000

PETER FISHER. A very popular medium or rose pink carnation. It is fairly immune to most carnation diseases, produces an abundance of cuttings, and is one of the easiest of all varieties to grow. The plants are tall and bushy, but not grassy. Stems are strong. The calyx very seldom bursts. Production is high. The flowers are of medium size and have deeply fringed petals. They are good keepers. One of the peculiarities of this variety is that the color deepens and is the loveliest during the warm, bright spring months when most other varieties are fading and becoming smaller. All of the Fisher varieties are at top quality during the period of the spring holidays. The one fault of the Fisher varieties is that during the dark days of mid-winter, the centers of the flowers do not unfold fully, creating the impression of having been cut on the tight side.

\$8.50 per 100 \$75.00 per 1000

SALMON PINK VARIETIES

SALMON VIRGINIA. A new light salmon pink sport of Virginia which has all of the characteristics and habits of Virginia. The color is a valuable addition to the present day list of commercial carnations, and should prove very popular. For further description, see Virginia.

\$12.00 per 100 \$100.00 per 1000

GIANT LADDIE. A deep salmon pink sport of Laddie with much larger flowers and more vigorous growing habits. The blooms are of show quality, and are ideal for the discriminating grower with a select trade. The flowers are gorgeous, and are carried on long, strong stems. Production is good for such a large flower.

\$12.00 per 100 \$100.00 per 1000

LIGHT PINK VARIETIES

HERCULES VIRGINIA. This is a new sport of Virginia, and is easily the most valuable light pink variety available today. The flowers are a little more vivid than those of Virginia, and they are very much larger. The first flowers do not appear much different from those of Virginia, but during the winter and spring months they are twice as large. Some splitting occurs. The plants have the same characteristics as the parent, and production is about the same. For further description, see Virginia.

\$15.00 per 100 \$125.00 per 1000

VIRGINIA. Until the advent of Hercules Virginia, this was the most widely grown and most valuable of the light pink carnations. It is still a very popular and valuable variety, and it is the parent of several valuable sports. The flowers are medium to large, have fringed petals, are borne on stiff, straight stems of medium length, and are famed for their keeping qualities. The calyx does not split. Production is good, and is uniform throughout the season. All of the Virginia varieties flower early, and the first flowers usually come on short stems, have open centers and are of poor quality. However, the stem lengthens and the quality of the blooms improves very rapidly. All of the Virginia varieties produce very few cuttings, so that in order to increase stock it is usually necessary to cut back the plants or purchase additional cuttings. All of these varieties may be carried over the second season very successfully. In spite of the lack of cuttings, the plants grow large and bushy. One of the most serious faults of the Virginia varieties is their susceptibility to Fusarium branch rot and Rhizoctonia stem rot. (For treatment of these diseases, see section on Insects and Diseases.)

\$8.50 per 100 \$75.00 per 1000

MAYTIME. Like all of the Maytime varieties, the flowers of this variety are large, full-centered and beautifully formed. The color is a lovely, rich shell pink. The plants are very tall, with long, straight stems. Although the production of cuttings is good, there is no surplus grass on the plants, and for best results they should be planted closer than most varieties. As they grow very rapidly, they must be wired and strung promptly so that they never lack adequate support. Production is very high, and the keeping quality is unsurpassed by any variety. The flowers maintain their size, color and quality during the warm, bright days of spring better than any other pink carnation. At times considerable splitting occurs, and the stems become brittle, but production is so high that the percentage of top grade blooms will still exceed that produced by most varieties.

\$8.50 per 100 \$75.00 per 1000

BLUSH FISHER. This is a recent sport of Peter Fisher, and is exactly the same as that variety except for color. The color is a very light and delicate shade of flesh pink. For further description, see Peter Fisher.

\$8.50 per 100 \$75.00 per 1000

SCARLET AND CRIMSON VARIETIES

BARBARA FARR. A sport of Spectrum Supreme. The color is lighter than that of Spectrum Supreme, there is less splitting, and production is slightly higher. Otherwise it has the appearance and habits of Spectrum.

\$8.50 per 100 \$75.00 per 1000

WOBURN. A deep crimson of very high quality. The flowers are large and full, and very nearly 100% of the blooms are perfect. No splitting occurs. The flowers keep and ship well, with no black edges on the petals. Stems are long and sturdy. Plants are fairly large, but have no surplus growth on them. Production is not high, but if the variety is grown inside and benched early, it will produce as many blooms as the average commercial variety.

\$8.50 per 100 \$75.00 per 1000

MISCELLANEOUS COLORS

MILLER'S YELLOW. In our opinion, this is the finest clear yellow carnation that has been introduced. It is a delight to grow this variety, for it is clean and vigorous, and develops rapidly into large, bushy plants producing long, sturdy stems and an abundance of high quality flowers. It produces cuttings freely, the calyx very rarely splits, and the flowers keep and ship to perfection. The color is a little lighter than that of Maine Sunshine, but it contains no variegation. Its sale is not restricted.

\$15.00 per 100 \$125.00 per 1000

PELARGONIUM. An English creation which for several years has been the most popular and profitable of the novelty carnations. The color is a white ground overlaid on each petal with maroon or orchid, creating a replica of the old fashioned pelargonium. The bloom is large and of good substance. The stem is tall, and the calyx is firm. The plants produce very few cuttings, and should be planted a little closer than most varieties in order to secure maximum production. In this manner, the production per square foot is as great as that of any commercial variety. The flowers will always command premium prices. The plants may successfully be carried over the second season.

\$12.00 per 100 \$100.00 per 1000

SCARLET KING. A sport of Pelargonium which is rapidly supplanting the parent variety in popularity. Its color is even more charming than that of Pelargonium. The overlay on each petal is a vivid red. In all other respects, it is the same as Pelargonium. Every carnation grower should have it.

\$12.00 per 100 \$100.00 per 1000

HEADFORT. (Name shortened from Marchioness of Headfort) One of the most beautiful novelty shades ever introduced. The petals are a creamy white, overlaid with a bright orange-red. It is an English variety. The flowers are very large and full, keep well, blend beautifully in floral arrangements, and are especially fine for corsages. The stems are sturdy, but quite short. Some splitting occurs. Production is good.

\$12.00 per 100 \$100.00 per 1000

LOCHINVAR. The petals of this unusual carnation are a rich garnet color fading to an orchid edge. Flowers are of medium size, and are semi-double. The stems are long and of good strength, and the calyx never splits. Production is very heavy. The foliage is narrow, and the plants carry no surplus growth, therefore fairly close planting should be practiced. There is a tendency for the color to become a solid garnet during the dark winter months, but as the days lengthen, the orchid edge again appears.

\$8.50 per 100 \$75.00 per 1000

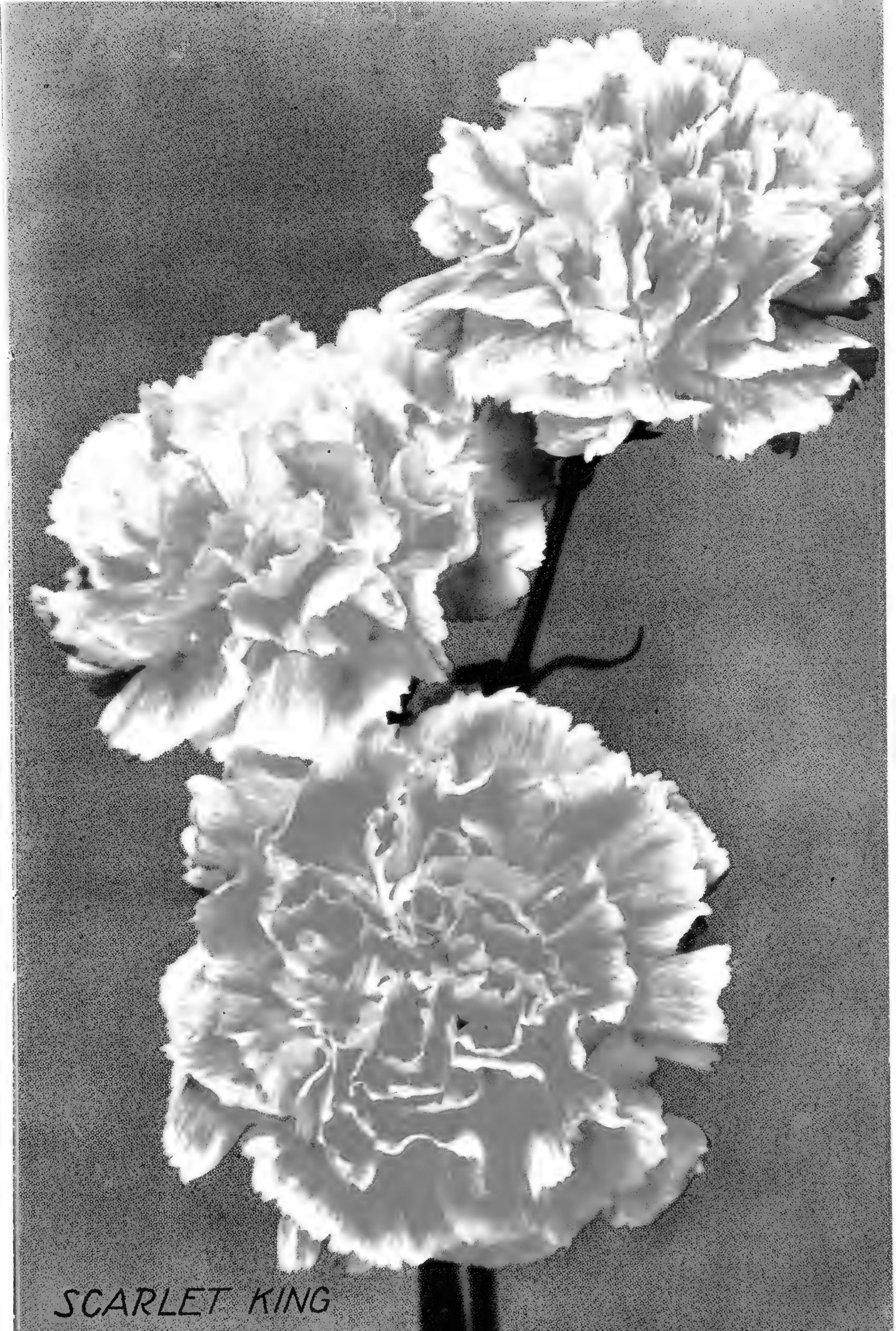
SILVERLYN. Deep pink with silver edges. The first flowers are likely to be mostly deep pink, but from December on the silver edge appears quite uniformly. It is a lovely novelty. The flowers are large and keep well. The plants become very large and bushy. The stem is good. There is some tendency to split.

\$8.50 per 100 \$75.00 per 1000

GOLDEN WNDER. By far the best of the yellow variegated varieties. The color is a sulphur yellow with deep pink pencilings. The blooms are of good size and form with slightly fringed petals. They keep and ship splendidly. Splitting is very slight. Stems are of medium length.

\$8.50 per 100 \$75.00 per 1000

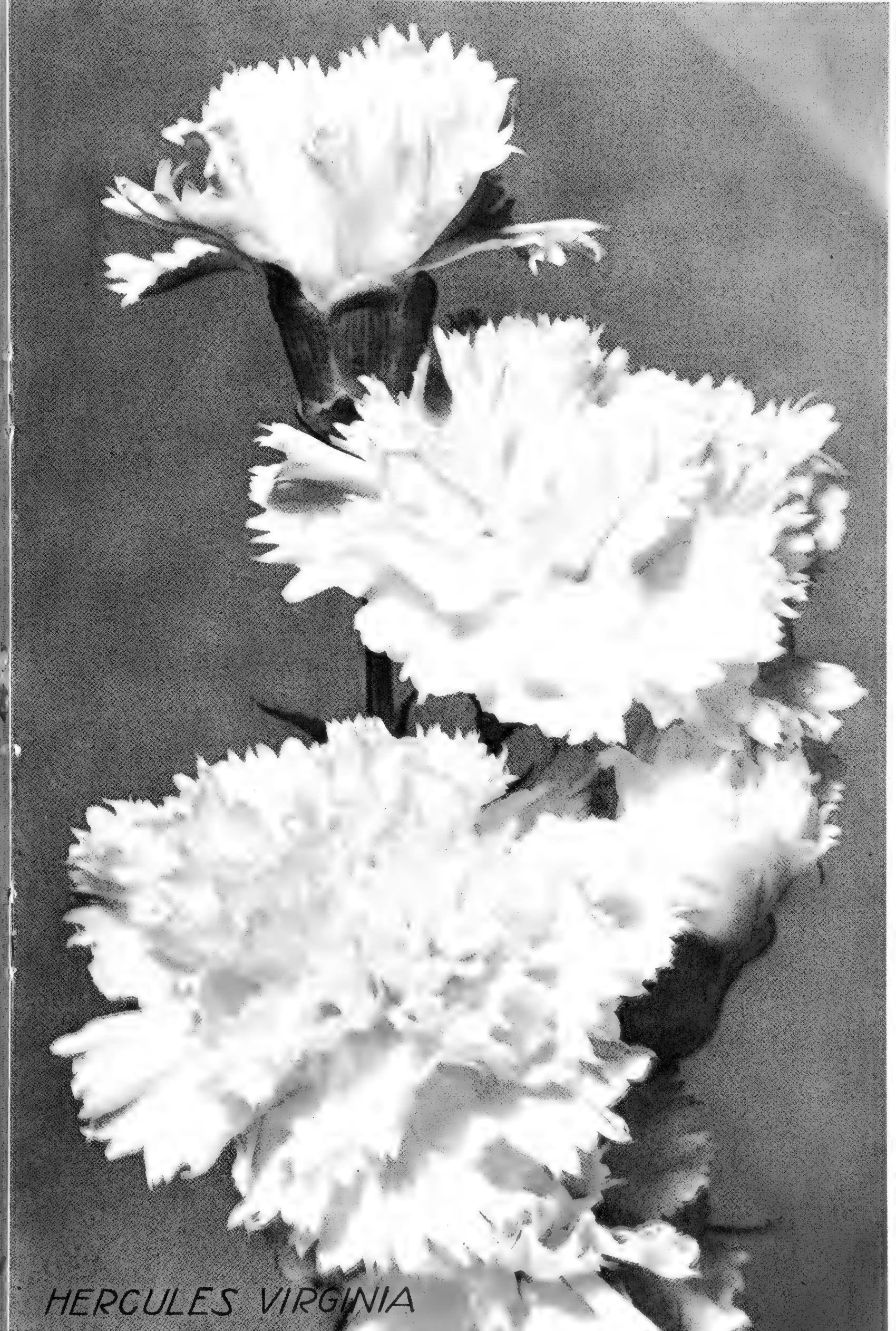
(Continued on page 11)



SCARLET KING



VIRGINIA MILLER



HERCULES VIRGINIA



MILLER'S YELLOW

BARBARA BRIGHAM. A sport of Golden Wonder having flowers which are a beautiful light apricot with pink pencilings. It is a color which blends magnificently with other flowers in arrangements, and is very popular with retail florists. It is free flowering, and its keeping qualities are good. The form, size and habits of growth are the same as those of Golden Wonder.

\$8.50 per 100 \$75.00 per 1000

MAINE SUNSHINE. Until Miller's Yellow was introduced, Maine Sunshine had been for years by far the best clear yellow variety available. It is still widely grown, and is a fine yellow carnation. Its color is clear sulphur yellow with no variegation at all, slightly deeper than Miller's Yellow. The flowers are of good size, keeping quality is excellent, stems are long and production is high. There is some splitting.

\$8.50 per 100 \$75.00 per 1000

PATENTED VARIETIES

The following varieties have been selected as the best of the patented carnations. They are owned by Baur-Steinkamp and Co. and A. Rasmussen and Son. Patent agreements must be signed. We act as brokers for these varieties, and will be happy to take your order subject to the ability of the patent owners to supply the stock. We will gladly take your order for ANY of the patented carnations, but especially recommend the following:

TOM KNIPE. A fine new scarlet seedling which may supplant King Cardinal as the leading red. The flowers are much larger and fuller than those of King Cardinal, the stems are long and sturdy, plants are large, bushy and easy to grow, and production is good. There is some tendency to split, and during very warm, bright weather, a slight darkening of the edges of the petals may occur.

\$20.00 per 100 \$150.00 per 1000

CHARM. A very attractive light salmon-pink carnation which is about the only commercial variety available in this color today. It is much lighter in color than Giant Laddie, and is more vivid than Salmon Virginia. The flowers are large, beautifully formed, and keep well. The plants are tall, with no surplus growth. The calyx is firm. Production is average.

\$20.00 per 100 \$150.00 per 1000

SETH PARKER. The finest of the crimson varieties. The flowers are larger than any others in this color class, and they have more red coloring which gives life to the blooms under artificial light. The variety is very long stemmed, splits very rarely, is a good keeper, and is more vigorous than most of the crimson varieties. The first flowers have a tendency to come a little off-color, but this condition is of short duration.

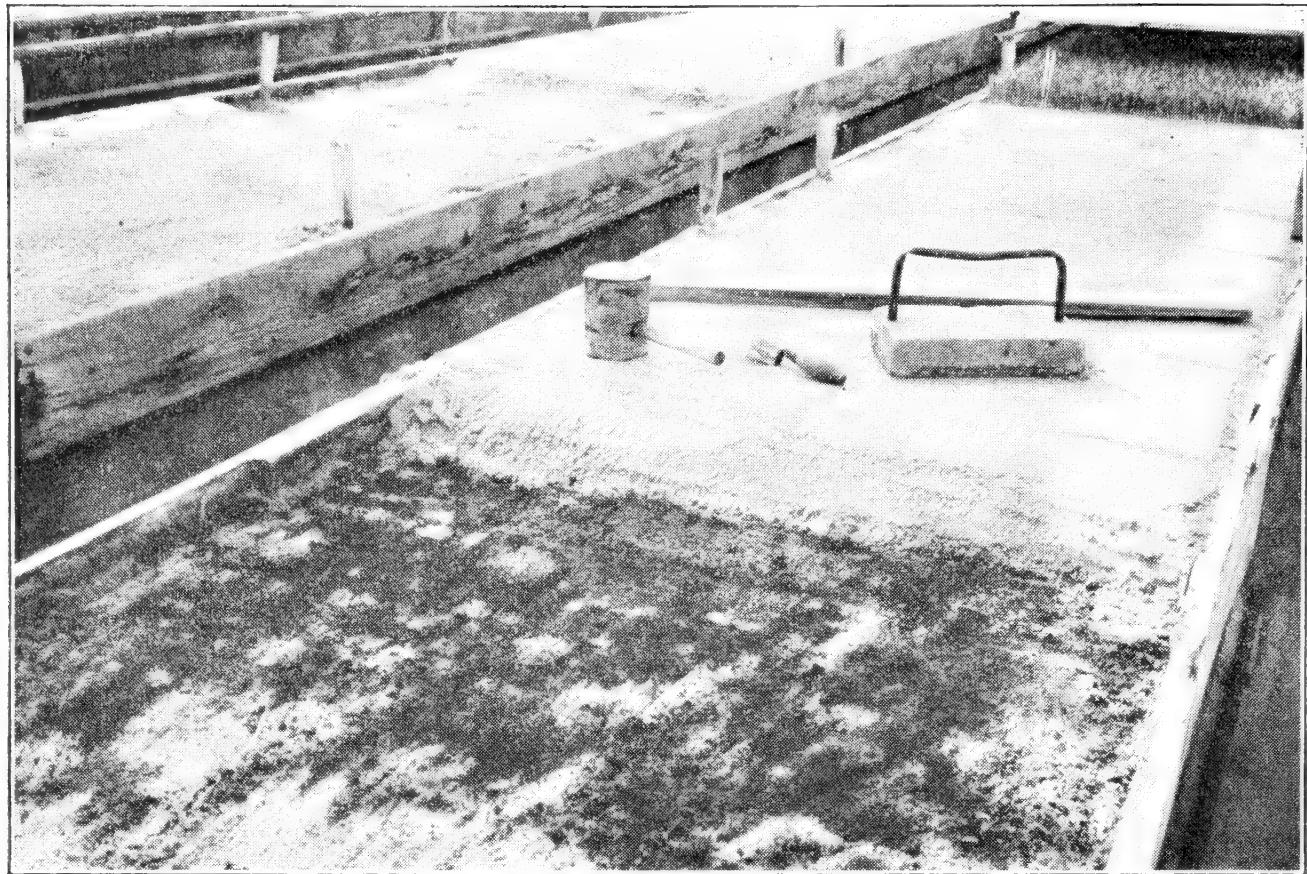
\$20.00 per 100 \$150.00 per 1000

ROSALIE. A nice deep pink in the Ward color class. The flowers are medium to large, are of good substance, have deeply fringed petals, and keep perfectly. Plants are vigorous and free. The stem is long and the calyx is firm. The variety does best when grown inside and benched before the plants become too large. It should be wired and strung promptly to prevent the branches from sagging and becoming crooked.

\$20.00 per 100 \$150.00 per 1000

KING CARDINAL. For several years, this fine variety has been the leading red carnation. The vivid scarlet flowers are medium to large, with almost smooth petals. Stems are long and strong, and splitting is very rare. Plants are large, bushy and easy to grow. Production is high. Flowers are at their best during the winter months. Flowers that appear during the hot, bright spring weather may not keep too well, but the keeping quality is excellent at all other seasons.

\$12.00 per 100 \$100.00 per 1000



A close-up of a propagating bench, showing the tools of the trade. Two and a half inches of sterilized sand over three inches of cinders for drainage. A concrete weight to compact the sand. A three inch board and trowel to mark the rows, and mallet to firm the sand around the cuttings.



A section of one of our three propagating houses. Curtains are used for shading in some of the houses, but here cloth screens are placed high enough above the cuttings to permit adequate circulation of air. Shading is practiced only during periods of bright sunlight and until the cuttings have started to root well.

TERMS

PRICES in this booklet are for the trade only. Prices to private estates and others outside the trade will be 20 per cent additional.

TWO HUNDRED FIFTY CUTTINGS, or more, of any one variety, are billed at the 1,000 rate. Fewer than 250 of one variety will be billed at the 100 rate.

SMALL ORDERS. Due to the serious shortage of labor and of shipping containers, we can accept no order for fewer than 100 cuttings, or for fewer than 50 cuttings of any one variety.

DISCOUNTS. We allow a 5 per cent discount if cash accompanies the order. A discount of 2 per cent is allowed if payment is made within ten days of the date of shipment.

PAYMENTS must be made on the first of the month following the date of invoice unless special terms have been arranged.

CREDIT will gladly be extended to worthy greenhouse operators. If you require more than thirty days in which to make payment, arrangements should be made with us previous to shipment. Unless previous arrangements have been made, accounts will be placed for collection at the end of sixty days.

CLAIMS must be in writing to us **WITHIN 24 HOURS AFTER RECEIPT OF SHIPMENT**, or stock must be returned to us within that same period of time. We are not responsible for damage to stock in transit. If stock is frozen, crushed or otherwise damaged in transit, claim should be brought against the transportation company. If you think that our stock is not as it should be, let us know at once. Do not experiment with it and later advise us that it was not satisfactory. No claims will be entertained unless the stock is returned immediately, or unless complaints are mailed to us within 24 hours after the shipment has been received.

CARRIAGE AND PACKING. No charge is made for packing, but carriage charges are paid for by the purchaser in all cases. All prices are F. O. B. Saugus, Mass.

SHIPMENTS will be made by Railway Express except in the case of European orders or unless we are otherwise instructed. In most cases, this is the most economical and satisfactory method of shipping. If your express office is different than your postoffice, be sure to advise us.

FOREIGN ORDERS must be accompanied by cash with allowance for carriage charges and differences in exchange. Foreign orders should be paid for with International Money Orders or drafts on a U. S. bank. Difference in exchange and the cost of cashing foreign checks often amount to a considerable sum. If special permits are necessary, these should be secured and forwarded to us with the order. We have shipped plants successfully to all parts of the world, but very often delays and expense may be avoided by a word of advice from a purchaser regarding customs requirements, best routes, etc.

BEETLE CERTIFICATES are not required on shipments of greenhouse grown cuttings rooted in sand when shipped either inside or outside of the quarantine area. However, if you feel that you must have a certificate, we will be glad to issue one when it is requested **PREVIOUS TO SHIPMENT**. We are not allowed to mail them **AFTER** shipment has been made.

NOTICES will be mailed you upon receipt of your order if we are unable to make immediate shipment. If we can ship your order within one week of its receipt, no notice will be sent you. Due to the tremendous demand for cuttings, the large backlog of orders and uncertain labor supply, we cannot always promise definite shipping dates. Orders will be shipped in rotation as rapidly as possible. Notice of shipment will be mailed to you the day your order is packed. Please be on the lookout for your order, and if it does not arrive within a reasonable time after you have received our notice of shipment, advise us at once.

IMPORTANT. Address all communications, send orders and make checks payable to the **SIM CARNATION CO., INC.**, Saugus, Mass.

MEMBER OF

New England Carnation Growers' Association
American Carnation Society
Massachusetts Horticultural Society
Florists' Credit Association
Society of American Florists



CULTURAL SUGGESTIONS

The cuttings you purchase are ready for potting or flatting. Do not put them back in the propagating sand. Ordinarily they will not require shading, but if they have been several days in transit and have softened up some, or if they are flatted up during warm, bright weather, a newspaper placed over the flat DURING THE HEAT OF THE DAY ONLY will help the plants to become established. Under no circumstances leave paper on the plants during dull weather or at night, and as soon as the roots have become established and the plants stiffen up, apply no further shade at any time.

The Railway Express Agency has done a grand job during the emergency. It has worked under tremendous handicaps. Occasionally delays occur. Very rarely are carnation cuttings damaged beyond redemption in transit. If your shipment was delayed only a day or two, this should not affect the value of the cuttings. If the cuttings are slightly wilted, they can be immersed in water for a short period and then planted. They will react perfectly to such treatment. If the cuttings have been slightly frozen, placing them in a cool room and thawing them out gradually, or placing them in a bucket of cool water to take the frost out, will bring them through so that they will do just as well as cuttings that have had nothing happen to them. Of course, if stock is badly frozen, or if long delays have occurred so that the cuttings are heated, yellow or rotted, a claim should be filed at once with the express company.

We do not recommend potting where flatting is possible. In some sections of the country potting is necessary, but plants are harder to carry properly in pots, will require more labor in pots, and will take up valuable bench space in pots. Flats do not have to be over 3 inches deep, and even two and a half inches will be sufficient. Flats may be placed on racks, and are easily moved from place to place. There is less danger of plants drying out or becoming root bound in flats, cultivation may be practiced, and as a rule the plants do much better in flats.

Carnations have been grown successfully in both sandy and clay soil and in soil having a wide range of acidity. However, a medium light soil with a pH of between 6.0 and 7.0 is generally considered best. It is better to have the soil slightly acid than to have it on the alkaline side. The soil to be used in the greenhouse should be tested during the preceding autumn and again in the spring, and whatever nutrients are needed should be added before the soil is moved inside. Cow manure, either green or rotted, is ideal for carnation soil if this can be obtained easily and is not too expensive. The ideal way to prepare the soil and thoroughly incorporate manure and fertilizer with it is to use a Rototiller or similar tool.

There has been a great deal of debate as to whether inside or field culture is the best for carnation plants. The majority of growers are of the opinion that field-grown plants give the best results. In the New England climate, plants that will be benched by the second or third week of June may safely be carried indoors, but from that date on, such a practice is very much of a gamble, particularly if the weather should be very hot.

Benching usually starts immediately after Memorial Day, and should be completed by the first of August. Plants benched after the first of August, even although they are large and vigorous, are unlikely to produce flowers of quality until late in the winter. The sooner that benching is completed after the first of June, the earlier the plants become established, and the more successful they are likely to be. It should not be necessary to shade the greenhouses after carnations have been benched. It is true that there are usually several very hot days when some shade would be desirable, but it is equally true that there will be many days

when shade would be detrimental. The damage caused by shade in dull weather will more than offset the advantages of having shade on the houses during a few very hot days. If shade is used, it should be light, and so mixed that rains will gradually remove it before late summer. Shade is actually more beneficial to employees working in the greenhouses during hot weather than it is to the plants.

Do not plant the cuttings in the flat or pot any deeper than they were in the sand. Deep planting encourages stem rot. Make a hole deep enough to accomodate the roots without rolling them up in a ball. Press the soil firmly about the roots. Water quite heavily after planting, then allow the soil to dry out fairly well before watering again. It is best to allow the soil to dry out pretty well between waterings, whether in flats or in benches, for a constantly moist soil prevents proper root development and encourages disease

It is inadvisable to water young carnation plants overhead. During very hot summer days, young carnation plants may safely be sprinkled overhead provided that there is no trace of fungus or bacterial disease on the plants and they will dry out completely before night. However, the benefit derived from overhead watering is hardly worth the risk involved.

Carnations are a cool crop. Keep your houses from 48 to 50 degrees at night. 52 degrees is about the maximum for proper growth. On bright, cool days, run your houses as near 60 degrees as possible. On cloudy days, keep the temperature down to about 55 degrees. Of course when the days are bright and warm, it is impossible to keep temperatures down to 60 degrees. Higher temperatures under such conditions are normal and perfectly safe, but plenty of ventilation should be given. Carnations like a free circulation of air at all times, but strong drafts should be avoided.

It makes very little difference whether carnations are planted in raised benches or ground beds. If drainage is adequate, they will do very well in ground beds. They do not require deep soil. Five inches of soil is sufficient. Planting is a very important operation, and should be closely supervised. Here, again, deep planting must be avoided. Roots should not be rolled up in a ball and pressed into the soil, but a hole large enough to accomodate the roots should be dug, and the soil pressed firmly about them. Plants should be handled very carefully to avoid injury, for not only is a broken branch a financial loss, but every injury is a potential source of infection later on. Some varieties require more space than others, but an average of 7 inches by 7 inches is sufficient. Some varieties such as Maytime or Pelargonium may be planted closer, while other varieties like John Briry or Miller's Yellow may require a little more space.

As a further aid to you in diagnosing and treating carnation diseases, we have described on the following pages the seven ailments which cause about 95% of the trouble in carnation houses. If you encounter any other problems that perplex you, we will be very happy to hear from you and to assist you to the best of our ability.

*Our prices are as low as is consistent with careful selection,
skillful propagation and efficient service.*

TREATMENT OF INSECTS AND DISEASES

RED SPIDERS . . .

This is the worst insect pest with which carnation growers have to contend. There are scores of remedies, particularly sprays, many of which are worthless, and some of which are dangerous. By far the best method of control is by fumigation with naphthalene base compounds. *Liquid Fulex* is outstanding in this field. Control in the field, in mixed houses, or where only small areas are involved may be by spray or dust. It is preferable to spray as little as possible, for there are very few sprays which will not injure the plants if used frequently. Sprays and dusts kill by contact, and must be applied thoroughly. Rotenone sprays are generally safe and effective on carnations. Oily sprays should be avoided as these are likely to remove the bloom from the foliage. Syringing with a fine stream of water under pressure may be practiced when plants are small and on bright, warm days, but should never be done whenever any fungus or bacterial disease is present. Dusts have met with varying degrees of success, and must be used very carefully in hot weather in order to avoid damage.

APHIDS AND THrips . . .

These are comparatively minor problems, and are easily remedied, although thrips will continue to blow in from outside as long as ventilators are open. Nicotine in one form or another is the best cure. Nicotine fumigation every four or five days until the insects are cleaned up is the most effective means of control. Spraying with Paris Green and brown sugar is effective in the case of thrips, but this leaves the foliage dirty and sticky for months.

RHIZOCTONIA STEM ROT *(Rhizoctonia solani)*

Foliage becomes dull, losing green color; entire plant wilts suddenly. Stem near soil wet and soft; the shredded bark sloughing off from the slightest twist, exposing harder tissues beneath. Roots remain intact. Brown knots of fungus mold evident about decayed portion of stem and adhering soil. Is caused by a common mold fungus which inhabits most soil and soil-contaminated sand. *It is not carried in cuttings.* Ordinarily the mold is a harmless soil fungus, but under favorable conditions it becomes a serious disease. It thrives under excessively moist and warm conditions. Control is a matter of correct watering and airing, sanitation, shallow planting, soil sterilization and soil rotation. Acidity, alkalinity or fertility of soil within the limits of good plant growth are of no value in the control of the disease. Spraying is useless. Steam sterilization, or sterilization with tear gas, helps, but sterilized soil may easily become reinfected if plants are brought in from outside.

FUSARIUM BRANCH ROT *(Fusarium Dianthi)*

Begins with the wilting of a single branch. Leaves are a dull green, then yellow and straw colored. The affected branch dries and shrivels. Infection at first is localized in the stem or branch near crotches or nodes. Injuries of one sort or another caused by careless handling, too rapid growth, topping, picking, etc., are essential for infection except where the disease has been carried with the cuttings. Upon cutting the branches lengthwise, the conductive tissue under the bark is seen to be yellowish or reddish brown extending *up and down following the sap channel*. If the branch is removed before the disease has progressed into the stem, the plant may possibly be saved. Later the brown color expands into the inner tissue of the stem and into the outer bark from the conductive tissue. When the stem is invaded, the branches on the infected side die, and ultimately the entire plant succumbs. The inside tissue of an invaded stem is dry and of a dull brown color, similar in appearance to dead timber. As the infection is usually aerial, soil sterilization is of little value, and there is no known spray which will prevent or cure it. Sterilizing benches, flats, soil and sand are sanitary

methods which are helpful, but do not expect to control Fusarium Branch Rot in this manner. Warm, moist conditions are favorable for the growth of the disease. Avoid excessive and overhead watering and injuries to plants. Provide plenty of air, and run houses cool. Discard those varieties that are particularly susceptible.

ALTERNARIA BLIGHT (*Alternaria dianthi*)

This disease is known as spot blight or branch rot. Purple spots appear on leaves and flower parts, later browning and blighting the parts. Under moist conditions the blighted parts become overgrown with blackish or sooty masses of fungus. After benching, the fungus causes a prevalent branch rot centering at the nodes. Here the fungus causes dark colored spots or cankers which partially or completely girdle the branch. Ultimately the rot progresses deeper into the tissue, and the portion of the branch above wilts. The color of the invaded tissue is dark brown, almost black, and the color may extend from the bark to the wood. The discoloration extends *inward from the outside*, and does not follow the conductive tissue as does Fusarium. Infection takes place without the plant having first been injured, and almost always occurs in the field. Before branches wilt, the leaves are streaked or marked with whitish or light green areas. Certain varieties are more susceptible to the disease than others. Inside culture will usually eliminate Alternaria. Spraying with Bordeaux weekly from the time that plants go to the field until they are benched will form a chemical barrier between the plant and the fungus which is very effective. Alternaria is not carried in the cuttings, and any variety is likely to be attacked.

BACTERIAL LEAF SPOT (*Phytomonas Woodsii*)

This disease is so rare in many sections that growers are likely to confuse it with alternaria blight or fairy ring, and therein lies its greatest danger. It is a foliage disease caused by a bacteria or microbe which progresses from the lower leaves upward, attacking the stem and bud only in very severe cases. If not checked, the plant becomes defoliated and will die. In any case, the plants will be checked and production arrested. The disease occurs *only in the presence of injuries*, but spiders, thrips, aphids, etc., will provide sufficient injury for the bacteria to gain entrance. It is, therefore, of vital importance that plants be kept free of insects. The development of the disease is slow at temperatures of 60 degrees or less, and very rapid at higher temperatures. The trouble is first indicated by the presence of small, oval spots of pale brown color. These spots are usually sunken, and soon become yellow with a dark green or purple margin. These spots may include the entire breadth of the leaf, and where spots are numerous, they have a tendency to grow together. Several spots ultimately cause the death of the leaf, in which case the leaf turns a yellow straw color, withers and dies, the spots retaining a rusty brown color. Greenhouses should be kept cool, dry and well ventilated. There must be no overhead watering of any kind. Fortunately the disease may be cured or prevented by use of a spray consisting of 3 pounds of zinc sulfate, 1½ pounds alum, 4 pounds hydrated lime, and a good spreader to 50 gallons of water. Dusting with fine sulphur is a further precaution which may be taken.

RUST . . . (*Uromyces caryophyllinus*)

Sulphur is the most effective preventative and cure for rust. Use fine dusting sulphur, and apply it with a good blower. Use it on young plants as soon as the first trace of rust appears, and apply on bright, warm, days. Sulphur may safely be used once a week or oftener. In light soils it may cause a slight acid reaction, but this is easily overcome. In the field where dusting is impractical, lime-sulfur may be sprayed. Bordeaux or other copper sprays have very little effect on rust. The disease is so easily prevented or cleaned up that there is no excuse for a grower permitting his plants to become damaged by it. Keep plants dry, provide plenty of air, and run houses cool.

